MODEL **NX** Oil Burner

Instruction Manual

Voltage: 120 Vac / 60 Hz

NX Burner

NX Burner Cover

Beckett

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Table 1 – Air Tube Combination (ATC) codes

Firing rate (gph)	Head	ATC codes for usable air tube lengths:		
(min-max)		**5”**	**7”**	**9”**
0.40-1.35	9-SLOT	NX50LB	NX70LB	NX90LB
0.40-1.35	6-SLOT	NX50LC	NX70LC	NX90LC

Prepare before installing

Verify specifications

Capacity	9-slot head Firing rate..... 0.40 – 1.35 GPH Input..... 56,000 – 189,000 Btu/h
	6-slot head Firing rate..... 0.40 - 1.35 GPH Input.....56,000 – 189,000 Btu/h
Fuels	**U. S.** .... No. 1 or No. 2 heating oil only (ASTM D396) **Canada…….** No. 1 stove oil or No. 2 furnace oil only
Electrical	Power supply..... 120 Vac/60 Hz/single phase Operating load. ..... 5.8 Amps maximum; Note 1 Motor.....1/7 hp, 3450 rpm, NEMA 48M frame PSC ..... rotation CCW when facing shaft end Ignition. ..... Continuous duty solid state igniter
Fuel unit	Outlet pressure..... Note 2
Air tube	ATC code.....See Table 1, page 2
Dimensions (with cover)	Height (maximum). .....12-1/2 inches Width (maximum). ..... 15 inches Depth..... 9-1/4 inches Air tube diameter.....3-1/4 inches

Note 1. A burner with electronic igniter and/or PSC motor will have a lower operating current. The actual load should be determined by a current meter.

Note 2. See appliance manufacturer's burner specifications for recommended outlet pressure. Pressure is 140 psig unless otherwise noted.

Be aware of hazard definitions

DANGER Denotes presence of a hazard which, if ignored, will result in severe personal injury, death, or substantial property damage.

WARNING Denotes presence of a hazard which, if ignored, could result in severe personal injury, death, or substantial property damage.

CAUTION Denotes presence of a hazard which, if ignored, could result in minor personal injury or property damage.

NOTICE Intended to bring special attention to information, but not related to personal injury or property damage.

Check certifications/approvals

- Underwriters Laboratories has certified this burner to comply with ANSI/UL 296 and has listed it for use with #1 or #2 fuel oil as specified in ASTM D396. ***Low sulfur #1 and #2 fuel oils reduce heat exchanger deposits with all burners compared to the standard fuels. Reduced deposits extend the service interval for cleaning and improve the efficiency of the appliance over time. Low sulfur fuels reduce particulate and oxides of nitrogen emissions as well. The Oilheat Manufacturers' Association recommends these fuels as the preferred fuels for this burner.***
- State and local approvals are shown on burner rating label (see below).
- **All oil burners should be installed in accordance with regulations of the latest revision of the National Fire Protection Association Standard NFPA 31 and in complete accordance with all local codes and authorities having jurisdiction. Regulation of these authorities take precedence over the general instructions provided in this installation manual.**
- For recommended installation practice in Canada, refer to the latest version of CSA Standard B139.

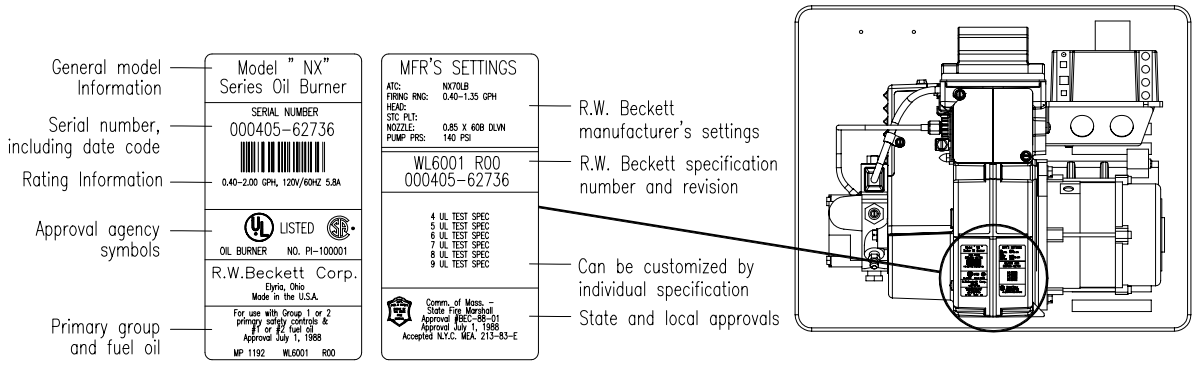
Notice special requirements

DANGER This equipment must be installed, adjusted and started only by a **qualified service agency** – an individual or agency, licensed and experienced with all codes and ordinances, who is responsible for the installation and adjustment of the equipment. The installation must comply with all local codes and ordinances and with the latest revision of the National Fire Protection Standard for Oil-Burning Equipment, NFPA 31 (or CSA B139).

WARNING **Read all instructions before proceeding**. Follow all instructions completely. Failure to follow these instructions could result in equipment malfunction, causing severe personal injury, death or substantial property damage.

NOTICE **Concealed damage** — If you discover damage to the burner or controls during unpacking, notify the carrier at once and file the appropriate claim.

NOTICE When contacting Beckett **for service information** — Please record the **burner serial number** (and have available when calling or writing). You will find the serial number on the silver label located on the left rear of the burner. See illustration below.



Prepare burner & site

Inspect/prepare installation site

Chimney or vent

- Inspect the chimney or vent, making sure it is properly sized and in good condition for use.
- For those installations not requiring a chimney, such as through-the-wall vented appliances, follow the instructions given by the appliance and power venter (if used) manufacturers.

Direct air supply and sidewall venting

- Some NX burners are equipped with a combustion air adapter to allow use of outside air for combustion.
- When sidewall venting appliances, carefully follow appliance and power venter instructions for installation and wiring.

Combustion air supply

See NFPA Standard 31 for complete details.

WARNING If the burner is not supplied with a reliable combustion air source, the burner cannot properly burn the fuel. This would result in incomplete combustion, causing sooting and possible emission of carbon monoxide. Severe personal injury, death or substantial property damage could occur.

Appliance located in confined space

The confined space should have two (2) permanent openings: one near the top of the enclosure and one near the bottom of the enclosure. Each opening shall have a free area of not less than (1) one square inch per 1,000 BTU's per hour of the total input rating of all appliances within the enclosure. The openings shall have free access to the building interior, which should have adequate infiltration from the outside.

Exhaust fans and other air-using devices

Size air openings large enough to allow for all air-using devices in addition to the minimum area required for combustion air. If there is any possibility of the equipment room developing negative pressure (because of exhaust fans or clothes dryers, for example), either pipe combustion air directly to the burner or provide a sealed enclosure for the burner and supply it with its own combustion air supply.

Outside air kit applications

Refer to separate instruction sheet supplied with NX outside air adapter for installation. This optional kit allows combustion air to be piped directly to the burner (Beckett part number 1014U).

WARNING You must install the outside air adapter strictly following the kit installation instructions. Do not attempt to install outside air piping without using the NX outside air adapter and instructions. Failure to do so could result in burner or heating appliance failure, causing potential severe personal injury, death or substantial property damage.

Inspect/prepare installation site *(continued)*

Clearances to burner and appliance

- Provide space around burner and appliance for easy service and maintenance.
- Check minimum clearances against those shown by the appliance manufacturer and by applicable building codes.

Combustion chamber — Burner retrofitting

Verify that the appliance combustion chamber provides at least the minimum dimensions given in Table 2.

CAUTION When retrofitting an appliance that has an unlined stainless steel combustion chamber, chamber burnout could result from the use of a high performance burner. Protect the chamber from high temperatures through the use of "wet-pac" or a similar ceramic liner. Some equipment may utilize a stainless steel combustion chamber that has been designed and tested by the manufacturer for use with a flame retention burner, therefore ceramic protection would not be necessary. Refer to appliance manufacturer's instructions. Failure to comply could result in damage to heating equipment.

Table 2 – Minimum combustion chamber dimensions

Chamber dimension (inches)					
Firing rate (gph)	Round I.D.	Rectangular		Height	Floor to nozzle
		Width	Length		
0.50	8	7	8	12	5-6
0.75	9	8	9	12	5-6
1.00	10	9	10	12 ½	5-6
1.25	11	10	11	12 ½	5-6
1.50	12	11	12	13	6-7
2.00	14	12	15	13 ½	6-7
2.50	16	13	17	14	7-8
3.00	18	14	18	15	7-8

Prepare burner

Low Firing Rate Baffle

The NX Low Firing Rate Baffle (LFRB), item 25, page 11, reduces the burner air flow and pressure. The LFRB is **sometimes** used for firing rates under 1.10 GPH. Refer to the appliance manufacturer's instructions or the Beckett *OEM Specification Guide* part number 6711. Do not omit the LFRB when specified. Omitting the baffle when specified or installing the baffle when not specified could result in poor burner performance.

Burner fuel unit

- Verify that the burner fuel unit is compatible with the oil supply system. For more details, refer to "**Connect fuel lines**" on page 8.

Attach air tube (*if not already installed*)

If using an adjustable flange and gasket, slide them onto the air tube. Then attach the air tube to the burner chassis using the four sheet metal screws provided.

Install burner nozzle (*if not already installed*)

WARNING Make certain the correct nozzle is selected for the actual fuel unit pressure. Nozzles are rated for 100 psig operation. With standard NX fuel unit pressure of 140 psig, the nozzle rated capacity will be lower than the appliance firing rate. See Table 3. Use only the specified spray pattern unless combustion test results indicate the need for a change. Failure to use the correct nozzle size and type can result in unacceptable combustion, possibly causing severe personal injury, death or substantial property damage.

1. Remove the plastic plug protecting the nozzle adapter threads
2. Place a ¾" open-end wrench on the nozzle adapter. Insert the nozzle into the adapter and finger tighten. Finish tightening with a ⅝" open-end wrench. Use care to avoid bending the burner head support legs or electrodes. See **CAUTION**, above right.
3. If you remove the head to replace the nozzle, carefully reconnect the head to the nozzle adapter, making sure to align the key in the support leg with the keyway in the nozzle adapter and to butt the head support to the nozzle adapter shoulder (see Figure 2, page 6).

If the nozzle is already installed, remove the nozzle line assembly to verify that the nozzle size and spray pattern are correct for the application (per appliance manufacturer's information or Beckett *OEM Specification Guide,* part number 6711. Verify that the electrode tip settings comply with Figure 1, page 6.

If the nozzle is not installed, obtain a nozzle of the manufacturer, capacity and spray angle specified in appliance manufacturer's information or Beckett *OEM Specification Guide*. For conversions or upgrades, when information is not available for the application:

4. Refer to table below to select the mid-range nozzle spray angle for the head type being used.
5. Fire the burner and make sure the combustion is acceptable and the flame is not impinging on chamber surfaces.
6. If a shorter flame is needed, select a wider spray angle. If a longer flame is needed, select a narrower spray angle.
7. Either hollow or solid spray patterns may be used. If combustion results are not satisfactory with the selected spray pattern, try the other pattern.

Recommended nozzle spray angles	
6-slot head	45°, 60°, or 70° nozzle
9-slot head	45°, 60°, or 70° nozzle

Install burner nozzle (*if not already installed*) *(continued)*

CAUTION Use care when removing and installing oil nozzles:

- Inspect the nozzle adapter before installing nozzle. If it is grooved or scratched on the sealing surface, replace the nozzle line assembly. Otherwise, oil could leak at the nozzle-adapter joint, causing serious combustion problems.
- Protect the nozzle orifice and strainer when installing. If the orifice gets dirt in it or is scratched, the nozzle will not function properly.
- Do not over-torque the nozzle when installing. This will cause deep grooves in the nozzle adapter, preventing a seal when a new nozzle is installed.
- Use a wrench to hold the nozzle adapter. **DO NOT** attempt to remove or replace nozzle without holding adapter. The nozzle alignment could be seriously damaged. Use a nozzle wrench that secures the adapter or use $^{3}/_{4}$" and $^{5}/_{8}$" open-end wrenches.
- Do not squeeze the electrodes too tightly when handling the nozzle line assembly. This could change the electrode tip settings or damage the ceramic electrode insulators.
- Carefully check and realign electrode tips after replacing nozzle, ensuring the electrode settings comply with Figure 1, page 6.

Table 3 – Nozzle size / pressure

Nozzle flow rate U. S. gallons per hour of No. 2 fuel oil when pump pressure (psig) is:					
Nozzle size (rated at 100 psig)	**125**	**140 (factory std.)**	**150**	**175**	**200**
0.40	0.45	0.47	0.49	0.53	0.56
0.50	0.56	0.59	0.61	0.66	0.71
0.60	0.67	0.71	0.74	0.79	0.85
0.65	0.73	0.77	0.80	0.86	0.92
0.75	0.84	0.89	0.92	0.99	1.06
0.85	0.95	1.01	1.04	1.13	1.20
0.90	1.01	1.07	1.10	1.19	1.27
1.00	1.12	1.18	1.23	1.32	1.41
1.10	1.23	1.30	1.35	1.46	1.56
1.20	1.34	1.42	1.47	1.59	1.70

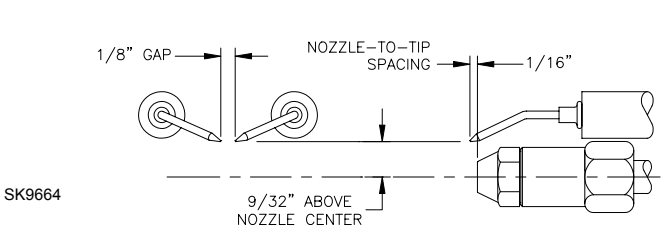
Prepare burner & site

Prepare burner *(continued)*

Check/adjust electrodes

Check the electrode tip settings. Adjust if necessary to comply with the dimensions shown in Figure 1. To adjust, loosen the electrode clamp screw and slide/rotate electrodes as necessary. Securely tighten the clamp screw when finished.

Figure 1 – Electrode tip gap and spacing



Servicing nozzle line assembly

1. Turn off power to burner before proceeding.
2. Remove burner cover by loosening the four thumb screws (two on each side of burner).
3. Disconnect copper oil connector tube from nozzle line.
4. Loosen the two screws securing igniter retaining clips and rotate both clips to release the igniter baseplate. The igniter should pop up and be supported by the prop spring.
5. Loosen the two screws securing the rear door. Swing door to the right and down
6. Loosen splined nut.
7. Remove nozzle line assembly from burner by drawing it straight back out the rear door opening. Be careful not to damage the electrodes or insulators while handling.
8. To replace the nozzle assembly, reverse the above steps.

Check retention head alignment

See Figure 2. Cad cell sighting holes in the throttle plate and retention head must line up so the cad cell can see the flame. Make sure the "key" in the retention head leg lines up with the "keyway" in the nozzle adapter when mounting the retention head.

Check/adjust "Zero" calibration

1. See Figure 3. The zero calibration has been factory set on burners with factory-installed air tubes. Make sure the retention head is securely against the stops in the retention ring when the adjustment plate pointer is at "0".
2. If the zero calibration has not been set, use the following procedure to adjust:
   - Install the nozzle line assembly with the adjustment plate assembly into the burner.
   - Install and tighten the rear door to hold the air adjustment plate assembly in position.
   - Slightly loosen the top left acorn nut, splined nut, and lower acorn nut.
   - Set the plate with the pointer to the zero position by turning the air adjustment screw clockwise.
   - Slide the nozzle line assembly forward until the retention head engages the fixed stops in the retention ring at the end of the air tube. See Figure 4, page 7.
   - Tighten the top left acorn nut securely.
3. The rear door must be kept tightly closed. The adjustment screw may now be turned to adjust the head/air setting. Tighten the splined nut and lower acorn nut after head/air setting has been made.

Figure 3 – Head/air adjustment plate assembly

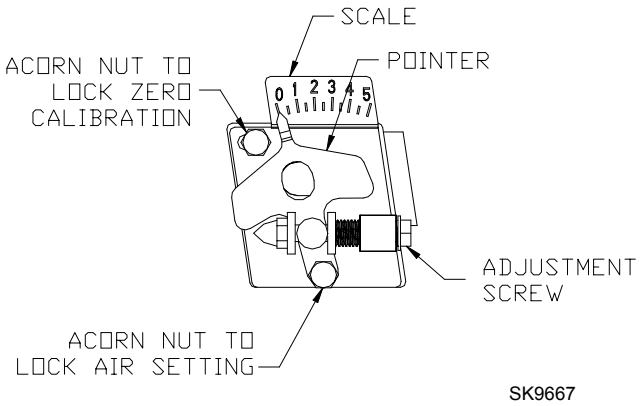
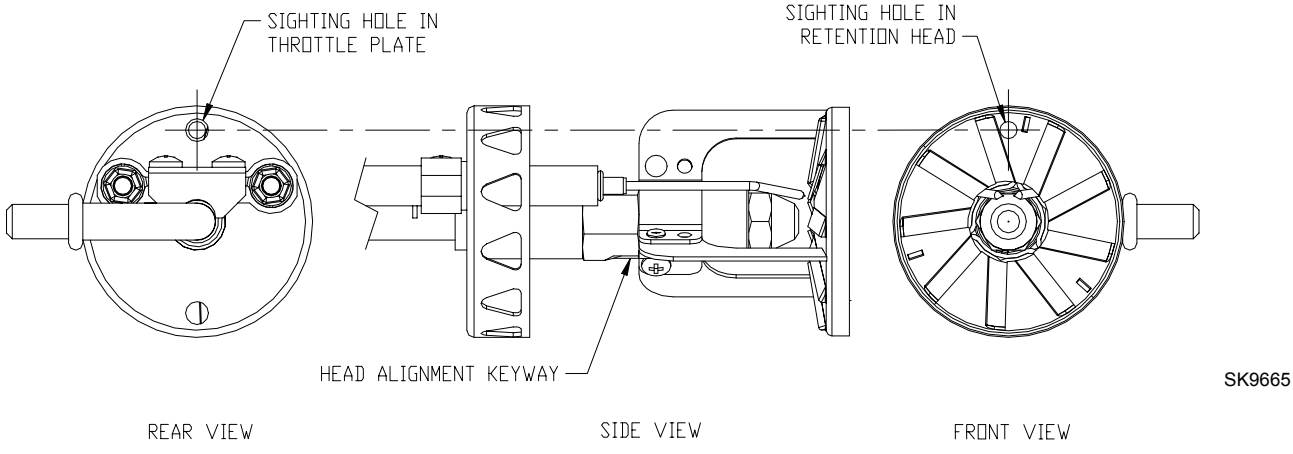


Figure 2 – Retention head/throttle plate alignment



Set head/air adjustment plate position

1. See Figure 4. Loosen the splined nut and lower acorn nut. (DO NOT loosen the top left acorn nut. This is used only for setting the zero calibration.)
2. Use a 5/16" nutdriver or flat blade screwdriver to turn the adjustment screw until the pointer points to the required head/air setting number.
3. Tighten the splined nut and lower acorn nut. Securely attach the copper oil line to the nozzle line flare fitting.

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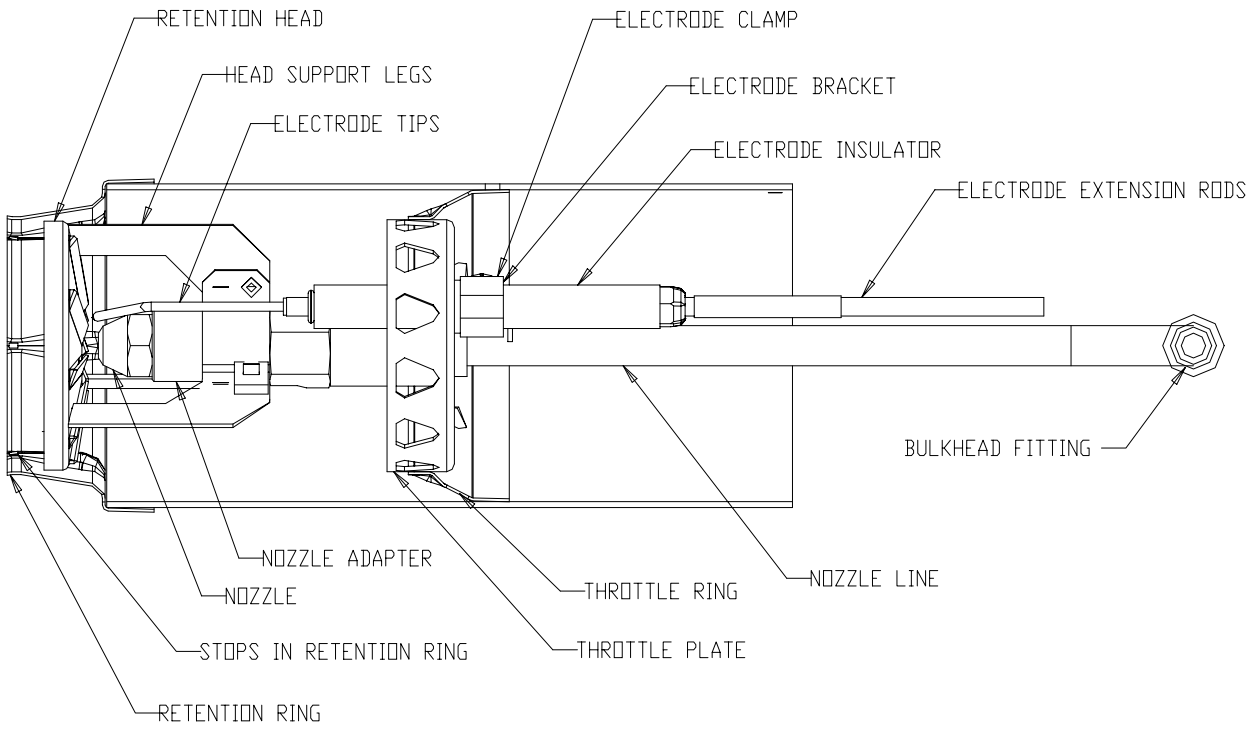
Figure 4 – Nozzle line/head/air tube assembly



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Adjustment plate setting number	Burner firing rate			
	6-slot head w/ LFR baffle	6-slot head w/o baffle	9-slot head w/ LFR baffle	9-slot head w/o baffle
0.5	0.40 – 0.60	--	0.40 – 0.60	--
1.0	0.50 – 0.70	--	0.50 – 0.70	--
2.0	0.60 – 0.80	0.85 – 1.05	0.60 – 0.80	0.85 – 1.05
3.0	0.70 – 0.90	0.95 – 1.15	0.70 – 0.90	0.95 – 1.15
4.0	0.80 – 1.00	1.05 – 1.25	0.80 – 1.00	1.05 – 1.25
5.0	0.90 – 1.10	1.15 – 1.35	0.90 – 1.10	1.15 – 1.35

Prepare burner & site

Adjust, pipe, & wire burner

Mount burner on appliance

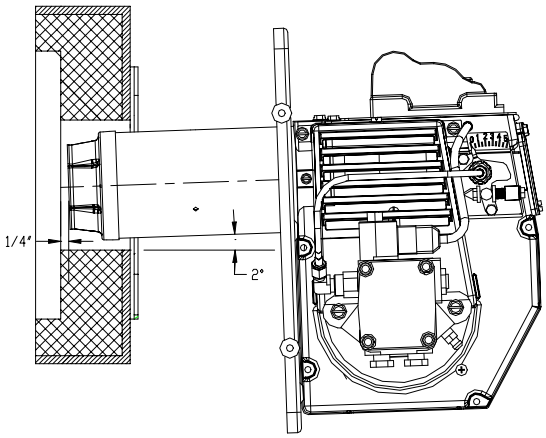
Mounting options

- Bolt the burner to the appliance using the factory-mounted flange or an adjustable flange.

Mounting dimensions

- When using the Beckett universal adjustable flange, mount the air tube at a 2° downward pitch unless otherwise specified by the appliance manufacturer.
- Verify that the air tube installed on the burner provides the correct insertion depth. See Figure 5.
- The end of the air tube should normally be ¼" back from the inside wall of the combustion chamber. Never allow the leading edge of the retention ring to extend into the chamber, unless otherwise specified by the heating appliance manufacturer. Carefully measure the insertion depth when using an adjustable flange. Verify the insertion depth when using a welded flange.

Figure 5 – Mounting burner in appliance



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Connect fuel lines

Carefully follow the fuel unit manufacturer's literature and the latest edition of NFPA 31 for oil supply system specifications. If this information is unavailable, use the following basic guidelines:

NOTICE Fuel units with automatic bypass do not require a bypass plug.

WARNING The burner fuel unit is shipped without the bypass plug installed. You must install this plug on two-pipe oil systems. **DO NOT** install the plug in the fuel unit if connected to a one-pipe oil system. Failure to comply could cause fuel unit seal failure, oil leakage and potential fire and injury hazard.

Fuel supply level with or above burner –

The burner may be equipped with a single-stage fuel unit for these installations. Connect the fuel supply to the burner with a single supply line if you want a one-pipe system (making sure the bypass plug is NOT installed in the fuel unit.) Manual bleeding of the fuel unit is required on initial start-up. If connecting a two-pipe fuel supply, install the fuel unit bypass plug.

Connect fuel lines *(continued)*

WARNING The oil supply inlet pressure to the fuel unit cannot exceed 3 psi. Install a pressure-limiting device in accordance with NFPA 31.

Fuel supply below the level of the burner –

When the fuel supply is below the level of the burner, a two-pipe fuel supply system is required. Depending on the fuel line diameter and horizontal and vertical length, the installation may also require a two-stage pump. Consult the fuel unit manufacturer's literature for lift and vacuum capability.

Fuel line installation –

- Continuous lengths of heavy wall copper tubing are recommended. **Always use flare fittings. Never use compression fittings.**
- Always install fittings in accessible locations. Fuel lines should not run against the appliance or the ceiling joists (to avoid vibration noise).

WARNING **Never** use Teflon tape on any fuel fitting. Tape fragments can lodge in fuel line components and fuel unit, damaging the equipment and preventing proper operation.

Fuel line valve and filter –

- Install two high quality **shutoff valves** in accessible locations on the oil supply line. Locate one close to the tank and the other close to the burner, upstream of the filter.

NOTICE Some states require these valves to be fusible-handle design for protection in the event of fire. We recommend this as good industry practice for all installations.

- Install a generous capacity **filter** inside the building between the fuel tank shutoff valve and the burner, locating both the filter and the valve close to the burner for ease of servicing. Filter should be rated for 50 microns or less.

Wire burner

Burner packaged with appliance

- Refer to appliance manufacturer's wiring diagram for electrical connections.

Burner applied at jobsite

- Refer to Figure 6, page 9, for typical burner wiring, showing cad cell primary controls. Burner wiring may vary, depending on primary control actually used. The oil valve shown in Figure 6 is the typical arrangement for NX burners.

NOTICE All wiring must be in accordance with the latest revision of National Electric Code NFPA 70 and local codes and regulations.

WARNING The wiring diagrams in this manual are for *general reference only*, and apply only to burners equipped with R7184 primary controls. For other controls, refer to the control manufacturer's literature or the diagrams supplied with the appliance. Failure to apply correct wiring could result in severe personal injury, death or substantial property damage.

NOTICE The **R7184** primary control with valve-on delay (*prepurge*) and burner motor-off delay (*postpurge*), shown in Figure 6, page 9, requires a constant 120 Vac power source supplied to the **BLACK** wire on the control. The **RED** wire goes to the appliance limit circuit. Please note that other control manufacturers may use different wire colors for power and limit connections.

Covered burners

The cover mounting plate is not a conduit connection point. Pass conduit and attached connector through the front opening in the mounting plate or through one of the knockouts on either side of the cover and attach it directly to the burner-mounted 4x4 electrical box.

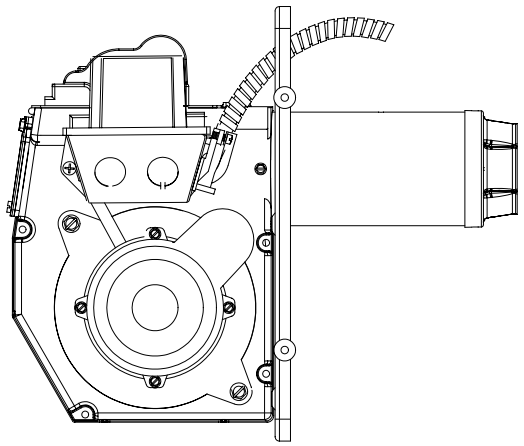

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Figure 6 – Typical wiring, R7184 primary control (R7184P shown)

Electrical shock hazard. Disconnect power before servicing.

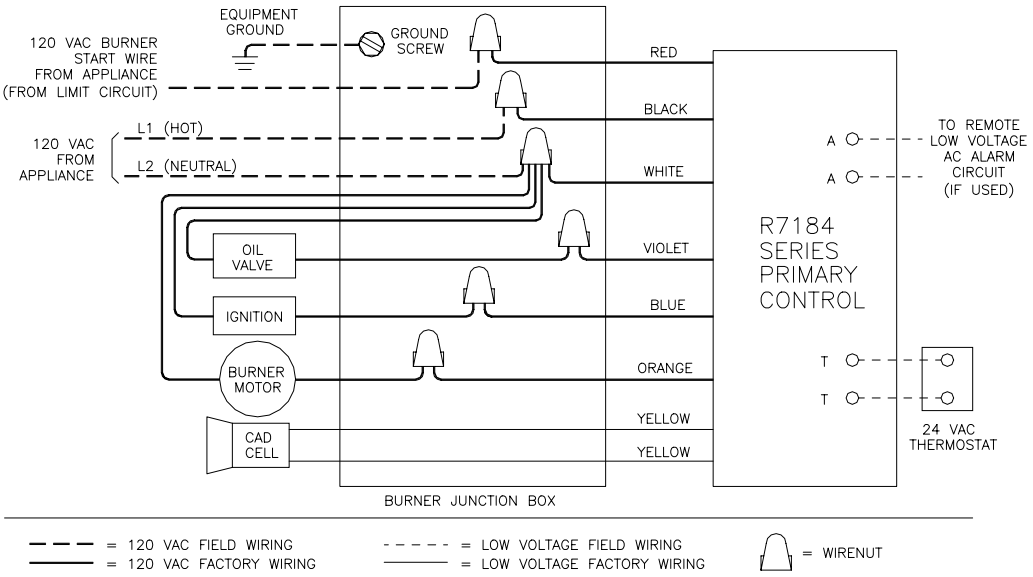

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Table 5 – R7184 primary control features

FEATURE	R7184B	R7184P
Interrupted ignition	YES	YES
Limited reset, limited recycle	YES	YES
Diagnostic LED, cad cell indicator	YES	YES
Valve-on delay	YES	YES
Burner motor-off delay		YES
Alarm contacts		Optional

Start up burner/set combustion

WARNING Do not attempt to start the burner when excess fuel or vapor has accumulated in the appliance. Starting the burner under these conditions could result in a puffback of hot combustion gases, high smoke levels, or otherwise hazardous operation.

1. Open the shutoff valves in the oil supply line to the burner.
2. Set head/air adjustment screw setting to 3. This is an initial air setting for the pump bleeding procedure only. Additional adjustments must be made with instruments.
3. Set the thermostat substantially above room temperature.
4. Close the line voltage switch to start the burner. If the burner does not start immediately you may have to reset the safety switch of the burner primary control.
5. **Bleed air from fuel unit** as soon as burner motor starts rotating.
   To bleed the fuel unit, attach a clear plastic hose over the vent fitting. Loosen the fitting and catch the oil in an empty container. Tighten the fitting when all air has been purged from the oil supply system.
   - If the burner locks out on safety during bleeding, reset the safety switch and complete the bleeding procedure. Note — Electronic safety switches can be reset immediately; others may require a three- to five-minute wait.
   - If burner stops after flame is established, additional bleeding is probably required. Repeat the bleeding procedure until the pump is primed and a flame is established when the vent fitting is closed.
   - For R7184 primary controls, see *Technician's Quick Reference Guide*, part number 61351 or 61465, for special pump priming sequence.
   - Prepare for combustion tests by drilling a ¼" sampling hole in the flue pipe between the appliance and the barometric draft regulator.
6. **Initial air adjustment** — Using a smoke tester, adjust the head/air setting to obtain a clean flame. Now the additional combustion tests with instruments can be made.

Set combustion with instruments

WARNING The combustion must be adjusted using test instruments. Failure to do so could result in burner or appliance failure, causing potential severe personal injury, death or substantial property damage.

1. Let burner run for approximately 5 to 10 minutes.
2. Set the over-fire or stack draft as specified by appliance manufacturer (usually –0.01 to –0.02 inches w.c. over-fire for natural draft applications).
3. Follow these four steps to properly adjust the burner:
   Step 1: Adjust air until a trace smoke level is achieved.
   Step 2: At the trace of smoke level, measure the CO_2 (or O_2). This is the vital reference point for further adjustments.
   - Example: 14.0% CO_2 (2.0% O_2)

   Step 3: Increase the air to reduce CO_2 by 1 to 2 percentage points. (O_2 will be increased by approximately 1.5 to 2.5 percentage points.)
   - Example: Reduce CO_2 from 14.0% to 12.0% (O_2 – 2.0% to 4.6%)

   Step 4: Recheck smoke level. It should be zero.
   - This procedure provides a margin of reserve air to accommodate variable conditions.
   - If the draft level has to be changed, recheck the smoke and CO_2 levels. Adjust the burner air if necessary.
4. Once combustion is set, tighten all fasteners on head/air adjusting mechanism.
5. Reinstall the cover and repeat Steps 2 and 4 above. If CO_2 increases (O_2 decreases), remove the cover and adjust the air setting so the CO_2 (O_2) with cover on meets requirements of Step 3.
6. Start and stop the burner several times to ensure satisfactory operation. Test the primary control and all other appliance safety controls to verify that they function according to the manufacturer's specifications.

Perform regular maintenance

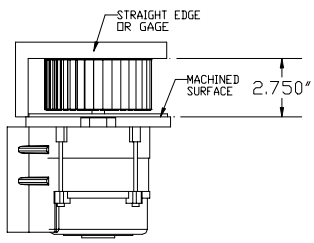
WARNING This equipment must be serviced only by a qualified service agency. The appropriate test instruments must be used. Failure to do so could result in burner or appliance failure, causing potential severe personal injury, death or substantial property damage.

- ❑ Replace the oil supply line filter. The line filter cartridge must be replaced to avoid contamination of the fuel unit and nozzle.
- ❑ Inspect the oil supply system. All fittings should be leak-tight. The supply lines should be free of water, sludge and other restrictions.
- ❑ Remove and clean the pump strainer if applicable.
- ❑ Replace the nozzle with an equivalent nozzle.
- ❑ Clean and inspect the electrodes for damage, replacing any that are cracked or chipped.
- ❑ Check electrode tip settings. Replace electrodes if tips are rounded.
- ❑ Inspect the igniter spring contacts.
- ❑ Clean the cad cell grid surface, if necessary.
- ❑ Make sure Low Firing Rate Baffle is in place if required for the burner application. Omitting the baffle can result in unacceptable burner combustion.
- ❑ Inspect all gaskets. Replace any that are damaged or would fail to seal adequately.
- ❑ Clean the blower wheel, air inlet, air guide, retention head, throttle plate and throttle ring of any lint or foreign material.
- ❑ If motor is not permanently lubricated, oil motor with a few drops of SAE 20 nondetergent oil at each oil hole. DO NOT over oil motor. Excessive oiling can cause motor failure.
- ❑ Check motor current. The amp draw should not exceed the nameplate rating by more than 10%.
- ❑ Check all wiring for secure connections or insulation breaks.
- ❑ Check the pump pressure and cutoff function.
- ❑ Check primary control safety lockout timing.
- ❑ Check ignition system for proper operation.
- ❑ Inspect the vent system and chimney for soot accumulation or other restriction.
- ❑ Clean the appliance thoroughly according to the manufacturer's recommendations.
- ❑ Check the burner performance. Refer to the section "**Set combustion with instruments**".

It is good practice to make a record of the service performed and the combustion test results.

To replace the blower wheel:

1. Turn off all power to the burner before servicing.
2. Disconnect the burner motor wires.
3. Remove the bolts securing the motor to the burner, remove motor.
4. Remove the existing blower wheel from the motor.
5. Slide the new blower wheel onto the shaft.
   - Place a straight edge across blower wheel as shown.
   - Slide blower wheel up shaft , 2.750" from machined motor mounting surface to straight edge.
   - Rotate the blower wheel until the setscrew is centered on the flat of the motor shaft. Tighten the setscrew to secure the wheel.
6. DO NOT use a motor that has endshield openings outside the blower wheel circumference.
7. Install the motor on the burner housing. Tighten screws. Reconnect wires.
8. Restore power, start the burner and perform combustion tests. Refer to the section "**Set combustion with instruments**".



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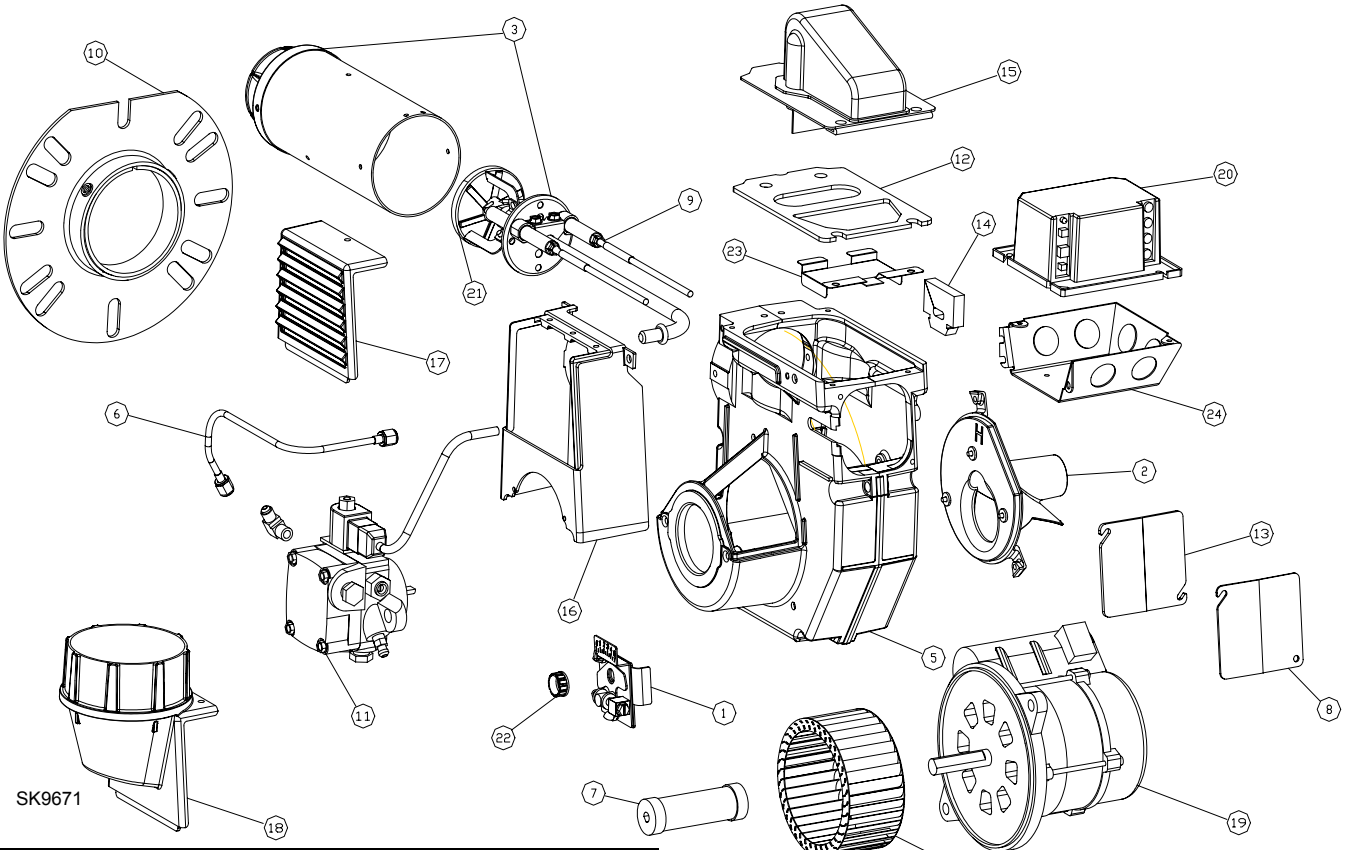
Replacement parts



Item	Description	Part No.
1	Air adjustment mechanism assembly	51794
2	Air guide	101101
3	Air tube combination Screws, air tube mounting #8 x 3/8	Specify 4396
4	Blower wheel	2999U
5	Burner housing assembly	51783GY
6	Connector tube assembly, 11”	51127
7	Coupling	2454
8	Door, rear access	32119BK
9	Electrode insulator kit	51811
10	Flange, universal adjustable	51801BK
11	Fuel unit A2EA6520N621L *(CleanCut)* (Note 1) Mounting screws ¼ -20 x 7/8”	21844U 4189
12	Gasket, igniter baseplate	31405
13	Gasket, rear access door	32033
14	Gasket, wiring	32050

Item	Description	Part No.
15	Igniter, electronic	51771U
16	Inlet air box	1010
17	Inlet air louvers	1013
18	Inlet air adapter, outside air kit	1014U
19	Motor Mounting screws ¼ -20 x 7/8”	21805U 4189
20	Primary safety control (Note 2)	Specify
21	Retention head assembly	Specify
22	Splined nut	3666
23	Spring, igniter prop	32058P
24	Wiring box	5770
25	Low firing rate baffle (not shown)	32229
	Cover, burner (not shown)	51812SV
	Mounting plate, burner cover (not shown)	32103BK
	Thumbscrews, cover mounting (not shown)	21899

Note 1 Use CleanCut pump or std. pump w/solenoid valve
Note 2 Prepurge control or other valve-on delay timer is req’d.

Service & maintain burner

Service & maintain burner

Owner's information

WARNING This burner must be installed, adjusted and started only by a **qualified service agency** — an individual or agency, licensed and experienced with all codes and ordinances, who is responsible for the installation and adjustment of the equipment.

- Have your equipment **inspected at regular intervals** by a **qualified service agency** to assure continued proper operation.
- Installation and adjustment of the burner requires technical knowledge and the use of combustion test instruments. **Do not tamper** with the unit or controls. Call your **qualified service agency**.
- **Incorrect operation of the burner could result in severe personal injury, death or substantial property damage.**

The following could result in fire hazard, severe personal injury, death or substantial property damage. Read carefully.

- **Never** attempt to **use gasoline** in your heating appliance.
- **Never store gasoline** or **combustible materials** near the burner or appliance.
- **Never** attempt to burn **garbage or refuse** in your appliance.
- **Never** attempt to **light the burner/appliance** by throwing burning material into the appliance.
- **Never** attempt to use **crankcase or waste oil** or material other than the approved fuel oils in this burner.
- **Never** restrict the air inlet openings to the burner or the combustion air ventilation openings in the room.

Owner service and maintenance

Properly installed and maintained, your **NX** burner will provide years of efficient, trouble-free operation. Please take care of your equipment by following the warnings provided and by doing the following (notify your qualified service agency if you find anything wrong):

Regular Service

- Have your burner/heating appliance serviced annually by your qualified service agency, unless an extended service interval has been determined as follows.
- With properly configured burners, there are special Clearburn® practices (such as low sulfur fuels, fuel additive programs, outside combustion air, high effectiveness filtration, etc.) that can extend service intervals. Discuss this with your qualified service agency to determine the proper regular service interval for your heating system.

Daily

Check the room in which your burner/appliance is installed. Make sure:

- air ventilation openings are clean and unobstructed
- nothing is blocking the burner inlet air openings
- no combustible materials are stored near the heating appliance
- there are no signs of oil or water leakage around the burner or appliance

Weekly

- Check your oil tank level. Always keep your oil tank full, especially during the summer, in order to prevent condensation of moisture on the inside surface of the tank.

Warranty

Beckett warrants its equipment specifically to those who have purchased it for resale, including your qualified service agency (dealer). In the event of any problems with your equipment or its installation, you should contact your dealer for assistance.

The Oilheat Manufacturers' Association supports the use of low sulfur fuels as defined by ASTM D396, Grades No. 1 Low Sulfur and No. 2 Low Sulfur, as the preferred heating fuel for the following reasons:

- Low sulfur fuels reduce deposits on heat exchanger surfaces, extending the service interval between cleanings.
- The reduced deposits increase the efficiency of the appliance.
- Low sulfur fuels reduce particulate emissions.
- Low sulfur fuels reduce oxides of nitrogen emissions.

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